

NOTICE

All drawings located at the end of the document.

**Draft Environmental Restoration
RFCA Standard Operating Protocol
for Routine Soil Remediation
FY04 Notification #04-02
IHSS Group 400-2**



October 2003

ADMIN RECORD

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Approval received from the Colorado Department of Public Health and Environment

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Approval letter contained in the Administrative Record.

October 2003

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ACRONYMS

AL	action level
bgs	below ground surface
BMP	best management practice
COC	contaminant of concern
cy	cubic yard
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
EDDIE	Environmental Data Dynamic Information Exchange
ER	Environmental Restoration
ER RSOP	Environmental Restoration RFCA Standard Operating Protocol
FY	Fiscal Year
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
mg/Kg	milligrams per kilogram
nCi/g	nanocuries per gram
PAC	Potential Area of Concern
pCi/g	picocuries per gram
PCOC	potential contaminant of concern
PDF	Portable Document Format
POC	Point of Compliance
POE	Point of Evaluation
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RSOP	RFCA Standard Operating Protocol
SSRS	Subsurface Soil Risk Screen
SWB	standard waste box
TRUPAC	transuranic packaging transporter
UBC	Under Building Contamination
VOC	volatile organic compound
WRW	wildlife refuge worker

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1.0 INTRODUCTION

This Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2003a) Fiscal Year (FY) 04 Notification includes the notification to remediate Individual Hazardous Substance Sites (IHSSs), Potential Areas of Concern (PACs), and Under Building Contamination (UBC) Sites at the Rocky Flats Environmental Technology Site (RFETS) Industrial Area (IA) during FY04. The purpose of this Notification is to invoke the ER RSOP for IHSS Group 400-2. Activities specified in the ER RSOP are not reiterated here; however, deviations from the ER RSOP are included where appropriate.

Soil with contaminant concentrations greater than the RFCA action levels (ALs), or as indicated by the Subsurface Soil Risk Screen (SSRS) and associated debris will be removed in accordance with RFCA (DOE et al, 2003) and the ER RSOP (DOE 2003a).

IHSS Group 400-2 is shown on Figure 1, and the proposed remediation site covered under ER RSOP Notification #04-02 is listed in Table 1.

Table 1
Potential Remediation Area for IHSS Group 400-2

IHSS Group	IHSS/PAC/UBC Site	PCOCs	Media	Estimated Remediation Volume
400-2	UBC 440 – Modification Center	Radionuclides, Metals, VOCs	Concrete and Subsurface soil	<3,700 cy ^a

^a – Based on removing 10 percent of the soil volume under the building footprint to a depth of 2.5 feet bgs

2.0 IHSS GROUP 400-2

IHSS Group 400-2 consists of UBC 440 – Modification Center. IHSS Group 400-2 is shown on Figure 2.

2.1 PCOCs

Potential contaminants of concern (PCOCs) at IHSS Group 400-2 are listed in Table 1. The PCOCs were determined based on process knowledge and data collected during previous studies (DOE 1992-2002, 2001).

2.2 Project Conditions

IHSS Group 400-2 consists of UBC 440, the former Modification Center. Building 440 is one of the newer facilities at the Site and is used as to stage waste drums and standard waste boxes (SWBs) for packaging into transuranic packaging transporter (TRUPAC) containers for shipment to off-site disposal facilities. Floor drains connected to the sanitary sewer are present in restroom/shower areas and a janitorial closet. No floor drains or sumps are present within the operations area of the building. Additionally, concrete berms constructed on the floor surface are placed throughout the building at garage doors and entry/exit areas as secondary containment in the event of a spill or leak from temporarily stored containers.

2.3 RFCA SSRS Evaluation

The SSRS is performed when nonradionuclides and uranium are present in soil between 6 inches and 3 feet bgs, and when americium and plutonium are present between 3 feet and 6 feet below ground surface. Current site conditions are evaluated to determine whether remediation is required by the SSRS. The SSRS will be conducted again after the accelerated action and related characterization tasks are completed. The accelerated actions taken, characterization results, and a revised SSRS will be documented in the IHSS Group 400-2 Closeout Report.

Screen 1 – Are contaminant of concern (COC) concentrations below RFCA Table 3 soil ALs for the wildlife refuge worker (WRW)?

Existing soil data, discussed in the IA Sampling and Analysis Plan (IASAP) Addendum #IA-04-01 for IHSS Group 400-2 (DOE 2003b), do not indicate that contaminant concentrations exceed RFCA WRW ALs. However, additional characterization will be conducted to determine whether RFCA WRW ALs are exceeded.

Screen 2 – Is there a potential for subsurface soil to become surface soil (landslide and erosion areas identified on Figure 1)?

IHSS Group 400-2 is not located in an area subject to erosion and landslides in accordance with Figure 1 of RFCA (DOE et al, 2003).

Screen 3 – Does subsurface soil contamination for radionuclides exceed criteria defined in Section 5.3 and Attachment 14?

Existing soil data, discussed in IASAP Addendum #IA-04-01 for IHSS Group 400-2 (DOE 2003b), do not indicate that concentrations of radionuclides exceed RFCA WRW ALs (RFCA Section 5.3)(DOE et al, 2003). However, historical knowledge indicates that additional characterization is warranted. Therefore, the IHSS Group will be further characterized in accordance with IASAP Addendum #IA-04-01, and results will be documented in a data summary or closeout report.

Screen 4 – Is there an environmental pathway and sufficient quantity of COCs that would cause an exceedance of the surface water standards?

Existing soil data indicate that there are not sufficient concentrations of contaminants to cause exceedances of surface water standards. However, the potential to exceed water quality standards will be reevaluated after any required accelerated action and related characterization are completed.

Contaminant migration via erosion and groundwater are the two possible pathways whereby surface water could become contaminated from IHSS Group 400-2 soil or structures. Runoff from IHSS Group 400-2 flows through gauging stations GS22 and GS38 (DOE 2002a). The nearest downgradient RFCA surface water Points of Evaluation (POEs) are SW027 and GS10 (DOE 2002a). These POEs have had reported exceedances of water quality standards; however, both SW027 and GS10 receive water from a large part of the IA, and surface water quality at these locations may not be attributable to any single upgradient IHSS Group. The potential for the IHSS Group to cause exceedances of surface water standards will be reevaluated based on the final characterization data.

Screen 5 – Are COC concentrations below RFCA Table 3 soil action levels for ecological receptors?

Existing soil data, discussed in the IASAP Addendum for IHSS Group 400-2 (DOE 2003b), do not indicate that there are contaminant concentrations that exceed RFCA WRW ALs or ecological receptor ALs. However, historical knowledge indicates that additional characterization is warranted. Therefore, the IHSS Group will be further characterized in accordance with IASAP Addendum #IA-04-01, and results will be compared to the ecological receptor ALs and documented in a data summary or closeout report.

2.4 Remediation Plan

The RSOP Notification remediation plan for IHSS Group 400-2 includes the following objectives:

- Following the demolition of Building 440, Decontamination and Decommissioning (D&D) will remove the concrete slab and associated structures within 3 feet of the existing grade in accordance with the RSOP for Facility Disposition (DOE 2000).
- Dispose of the Building 440 concrete slab. Removal of the Building 440 slab located in IHSS Group 400-2 will be recycled in accordance with the RSOP for Recycling Concrete (DOE 1999) or disposed at an appropriate facility based on waste characterization results.
- Remove soil with nonradionuclide or uranium contaminant concentrations greater than the proposed RFCA WRW ALs to a depth of 6 inches. If soil contamination greater than the ALs extends below 6 inches in depth, perform the SSRS to evaluate the need for further accelerated action.
- Remove soil with plutonium concentrations greater than the RFCA WRW AL to a depth of 3 feet, or to less than 50 picoCuries per gram (pCi/g), whichever comes first. If concentrations are greater than 3 nanoCuries per gram (nCi/g) between 3 and 6

feet, characterize in accordance with RFCA Attachment 5 (DOE et al, 2003). If plutonium is present below 6 feet, conduct an SSRS.

- Consult with the regulatory agencies if contaminant concentrations are greater than the ecological ALs but lower than the WRW ALs.
- If contaminated soil is removed, collect confirmation soil samples in accordance with the IASAP (DOE 2001).

It is anticipated that after remediation there may be areas with concentrations of metals, radionuclides, and organics greater than background means plus two standard deviations or method detection limits or reporting limits, but below RFCA ALs.

2.5 Stewardship Evaluation

Based on the PCOCs (Table 1 and Section 2.1) and the ER RSOP (DOE 2003a), it is anticipated that all contamination above RFCA ALs will be remediated. Figure 2 shows the potential remediation area (UBC 440).

Because the full extent of excavation and remediation is not known at this time, an additional stewardship evaluation will be conducted during remediation using the consultative process and will be documented in a closeout report for IHSS Group 400-2. A new map of residual contamination will be generated after remediation. The following sections present the stewardship evaluation.

2.5.1 Proximity to Other Contaminant Sources

IHSS Group 400-2 is in the RFETS IA and is located close to other contaminant sources. IHSS Group 400-1, which includes UBC 439, is located northeast of IHSS Group 400-2. IHSS Group 400-3, which includes UBC 444 and UBC 447, is located north of IHSS Group 400-2. IHSS Group 400-5, which includes PAC 400-205, is located northwest of IHSS Group 400-2. Group 400-10, which includes PAC 600-161, is located east of IHSS Group 400-2.

2.5.2 Surface Water Protection

Surface water protection includes the following considerations:

Is there a pathway to surface water from potential erosion to streams or drainages?

Soil contaminants from IHSS Group 400-2 could migrate to surface water. The runoff from the western half of Building 440 is captured by the storm sewer system and flows south into the South Interceptor Ditch which empties into Pond C-2. The runoff from the eastern half of Building 440 flows northeast and surface runoff is conveyed to North Walnut Creek.

Do characterization data indicate there are contaminants in surface soil?

Existing soil data, discussed in IASAP Addendum #IA-04-01 for IHSS Group 400-2 (DOE 2003b), do not indicate that there are contaminant concentrations that exceed RFCA WRW ALs. However, additional characterization will be conducted to determine

whether RFCA WRW ALs are exceeded. Additional characterization data will be documented in a data summary or closeout report.

Do monitoring results from POEs or Points of Compliance (POCs) indicate there are surface water impacts from the area under consideration?

The nearest RFCA POEs are SW027 and GS10, and exceedances of water quality standards have been detected at these monitoring stations. However, each monitoring station receives water from a large part of the IA, and surface water quality at the monitoring stations cannot be attributable to any single IHSS Group.

Is the IHSS Group in an area with high erosion potential, based on the 100-Year Average Erosion Map?

IHSS Group 400-2 is not located in an area subject to erosion in accordance with Figure 1 of RFCA (DOE et al, 2003).

2.5.3 Monitoring

Monitoring includes the following considerations:

Do monitoring results from POEs or POCs indicate there are groundwater impacts from the area under consideration?

Two groundwater monitoring wells are located near IHSS Group 400-2: P416689 and P416789. Well P416689 is considered a plume extent well and well P416789 is considered a plume definition well. Both wells contained uranium-233/234 and uranium-238 concentrations that exceeded the RFCA Tier II groundwater ALs but were below background means plus two standard deviations (DOE 2002b).

The Site plume location map (DOE 2002b) indicates that the volatile organic compound (VOC) plume begins near the northeastern corner of IHSS Group 400-2 and migrates to the northeast; however, this plume is much larger than the IHSS Group and is attributed to multiple sources within the IA.

Can the impact be traced to a specific IHSS Group?

No.

Are additional monitoring stations needed?

Not applicable at this time. The need for and placement of monitoring stations will be re-evaluated in the Long-Term Stewardship Plan.

Can existing monitoring locations be deleted if additional remediation is conducted?

Not applicable. Existing wells monitor contamination from areas outside IHSS Group 400-2.

2.5.4 Stewardship Actions and Recommendations

The current stewardship actions and recommendations for IHSS Group 400-2 are as follows:

- Use best management practices (BMPs) to reduce erosion into surface water drainage.
- Implement near-term institutional controls until final closure and stewardship decisions are implemented, including the following:
 - Fencing and/or signs to restrict access; and
 - Soil excavations controlled through the Site Soil Disturbance Permit process.
- Implement long-term stewardship actions, including the following:
 - Prohibitions on construction of buildings in the IA; and
 - Restrictions on excavations or other soil disturbance.

These recommendations may change based on in-process remediation activities and other future RFETS remediation decisions.

2.6 Accelerated Action Remediation (RAOs) Goals

ER RSOP remedial action objectives include the following:

- Provide a remedy consistent with the RFETS goal of protection of human health and the environment;
- Provide a remedy that minimizes the need for long-term maintenance and institutional or engineering controls; and
- Minimize the spread of contaminants during implementation of accelerated actions.

2.7 Treatment

Not applicable.

2.8 Project-Specific Monitoring

High-volume air samplers may be used at the remediation area consistent with work controls to determine airborne radioactivity concentrations. Approximate locations of air samplers are shown on Figure 2.

2.9 RCRA Units and Intended Waste Disposition

Building 440 is classified as Resource Conservation and Recovery Act (RCRA) Unit 440.1 and is currently scheduled for closure during FY05. Closure activities will be conducted in compliance with RCRA and RFCA.

2.10 Administrative Record Documents

DOE, 1992-2002, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado.

DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, 2003, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation Modification, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, CDPHE, and EPA, 1996, Final Rocky Flats Cleanup Agreement, U.S. Department of Energy, Colorado Department of Public Health and Environment, and U.S. Environmental Protection Agency, Rocky Flats Environmental Technology Site, Golden, Colorado July.

DOE, CDPHE, and EPA, 2003, Modifications to the Rocky Flats Cleanup Agreement Attachment, U.S. Department of Energy, Colorado Department of Public Health and Environment, and U.S. Environmental Protection Agency, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

2.11 Projected Schedule

Remediation of IHSS Group 400-2 is expected to begin in third quarter of FY04.

3.0 PUBLIC PARTICIPATION

ER RSOP Notification #04-02 activities were discussed at the October 2003 ER/D&D Status meeting. A Portable Document Format (PDF) version of this Notification was provided to the local governments. This Notification is available at the Rocky Flats Reading Rooms and on the Environmental Data Dynamic Information Exchange (EDDIE) Website at www.rfets.gov.

4.0 REFERENCES

DOE, 1992-2002, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado, June.

DOE, 1999, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2000, RFCA Standard Operating Protocol for Facility Disposition, Rocky Flats Environmental Technology Site, Golden, Colorado, August.

DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, 2002a, Automated Surface Water Monitoring Report, Water Years 1997-2000, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2002b, Second Quarter RFCA Groundwater Monitoring Report, Rocky Flats Environmental Technology Site, Golden, Colorado, November.

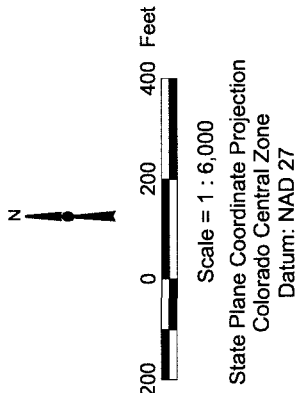
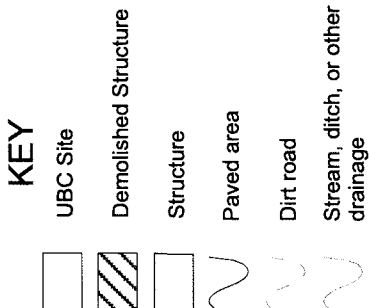
DOE, 2003a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation Modification, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2003b, Industrial Area Sampling and Analysis Plan FY04 Addendum #IA-04-01, Rocky Flats Environmental Technology Site, Golden, Colorado, October.

DOE, CDPHE, and EPA, 2003, Modifications to the Rocky Flats Cleanup Agreement Attachment, U.S. Department of Energy, Colorado Department of Public Health and Environment, and U.S. Environmental Protection Agency, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

Figure 1

IHISS Group 400-2
Location Map



U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RADMS

Prepared for:



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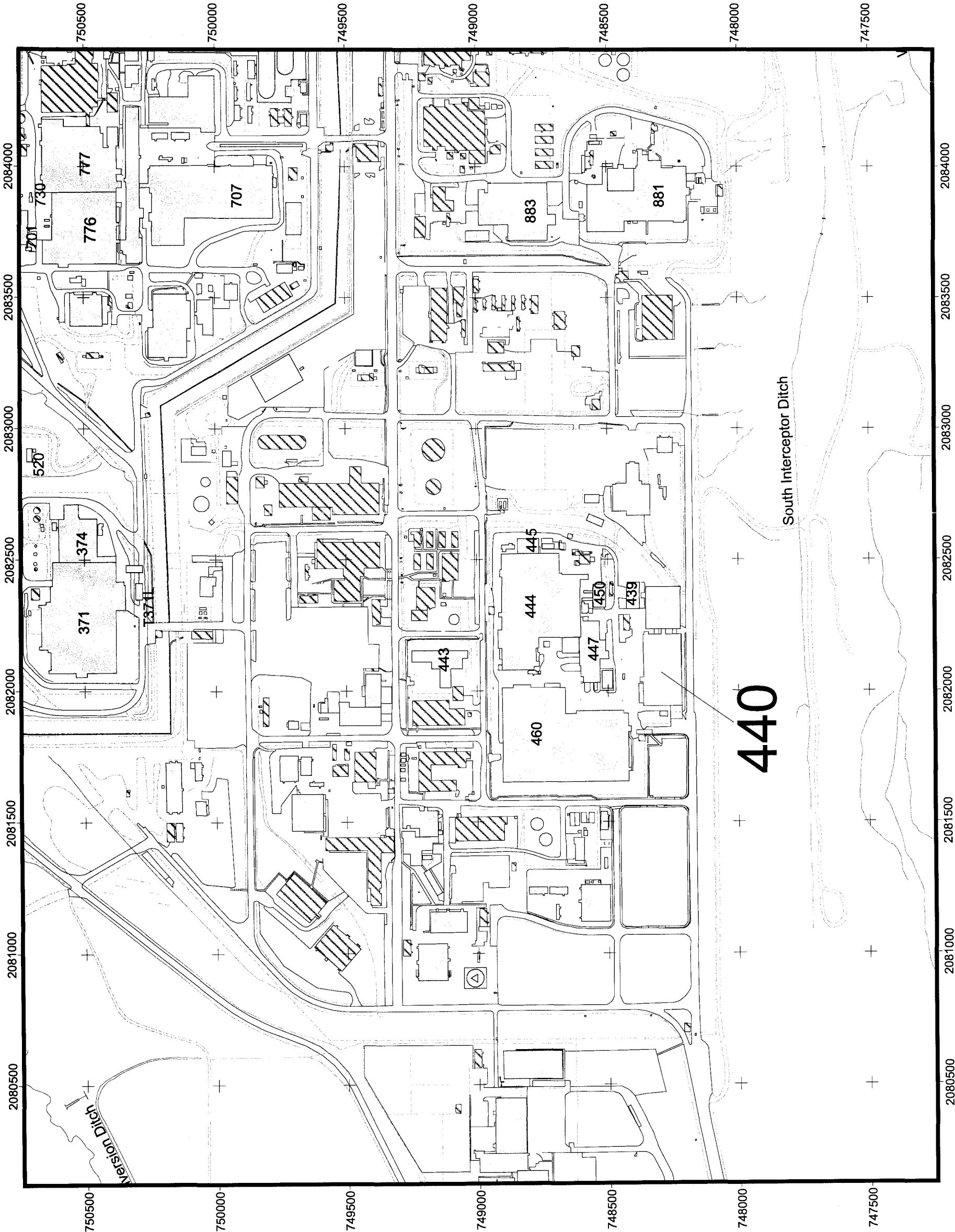


Figure 2
IHSS Group 400-2
Potential Remediation Area

KEY

- UBC Site
- Demolished Structure
- Structure
- Paved area
- Dirt road
- Stream, ditch, or other drainage
- Approximate location of air sampler

100 0 100 200 Feet
Scale = 1:500

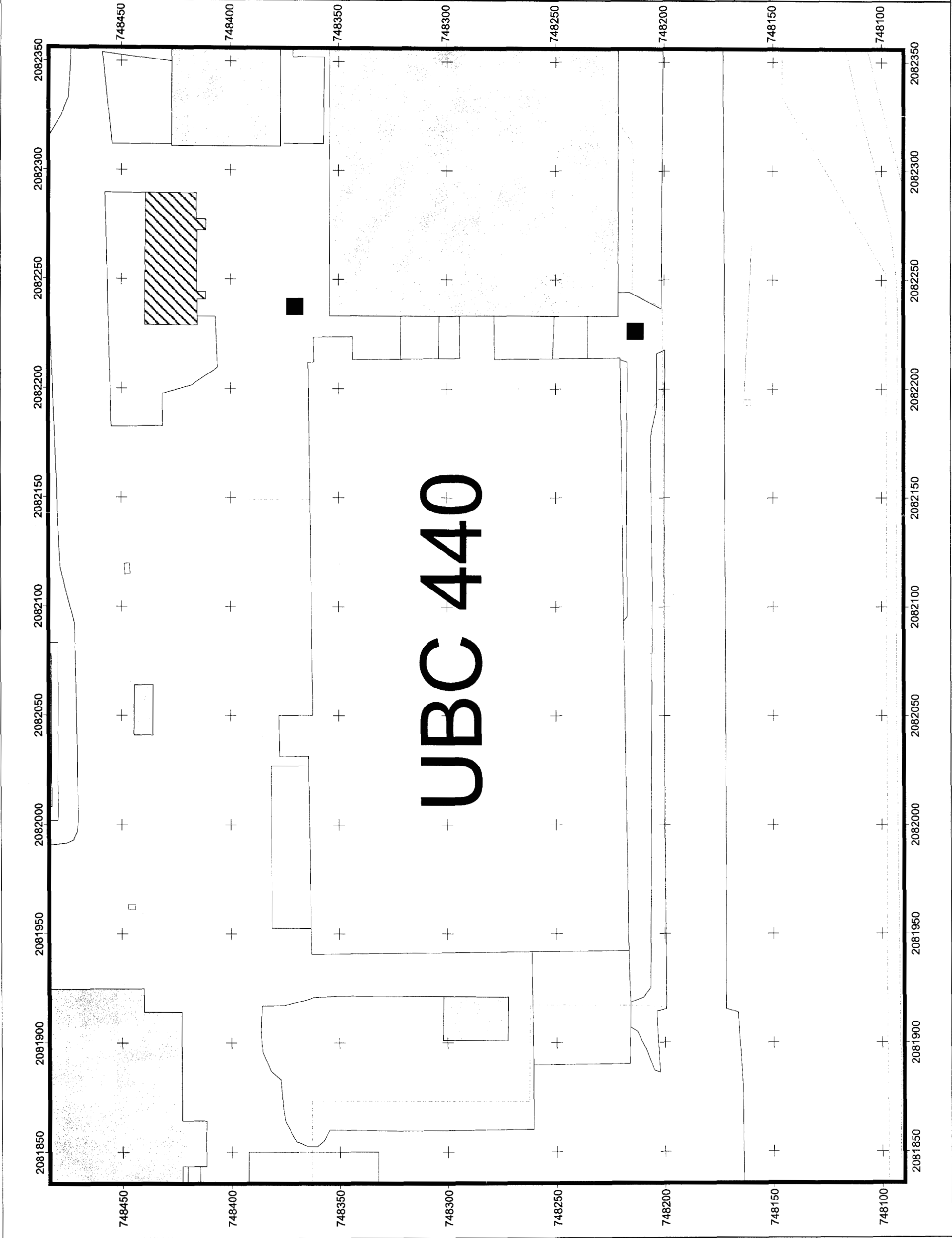
State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: **RADMS**
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